

WHAT IS CLAIMED IS:

1. A system for acquiring imaging information from within a body lumen, comprising an imaging information acquisition component configured to detect image information from within a body lumen, an image information storage component configured to store image information in an electronically readable form, an image information playback component configured to read said stored image information and to output an electronic signal in accordance with said stored image information, and transmission elements effective to transfer image information between said components.

2. The system of Claim 1, further comprising a control component.

3. The system of Claim 1, wherein said imaging information acquisition component comprises an imaging guidewire (IGW).

4. The system of Claim 3, wherein said IGW is configured to perform a rotational scan effective to acquire imaging information from a plurality of positions within said body lumen.

5. The system of Claim 4, wherein said IGW comprises a shaft and an image acquisition component configured to rotate within said shaft.

6. The system of Claim 5, wherein said IGW comprises a pathway effective to pass imaging information to said image acquisition component configured to rotate within said shaft, wherein said pathway is selected from the group consisting of windows and apertures.

7. The system of Claim 3, wherein said IGW comprises an optical IGW.

8. The system of Claim 1, wherein said imaging information storage component comprises an addressable memory storage device.

9. The system of Claim 8, wherein said addressable memory storage device is selected from the group of addressable memory storage devices consisting of magnetic memory disks, magnetic tapes, random access memory chip devices ("RAM"), magnetic/optical memory disks, and optical memory disks.

10. The system of Claim 8, wherein said addressable memory storage device comprises an erasable memory storage device.

11. The system of Claim 8, wherein said addressable memory storage device comprises a permanent memory storage device.

12. The system of Claim 1, wherein said image information playback component comprises an electronic device configured to locate an address in an addressable memory storage device.

13. The system of Claim 12, wherein said electronic device configured to locate an address in an addressable memory storage device comprises a digital central processing unit.

14. The system of Claim 1, wherein said imaging information is detected in discrete image samples in a sequence, wherein the number of image samples detected per second comprises an image acquisition rate, and wherein said stored imaging

information is played back in discrete units, wherein the number of units played back per second comprises an image playback rate.

15. The system of Claim 14, wherein said image playback rate is configured to be a selectable playback rate selected from the group of playback rates consisting of positive playback rates, wherein a positive playback rate plays discrete image units in ascending order with respect to the acquisition sequence; negative playback rates, wherein a negative playback rate plays discrete imaging units in descending order with respect to the acquisition sequence; playback rates lesser than the acquisition rate; the playback rate equal to the acquisition rate; and playback rates greater than the acquisition rate.

16. The system of Claim 14, wherein said playback rate comprises a playback rate lesser than the acquisition rate.

17. The system of Claim 1, further comprising a display device.

18. The system of Claim 17, wherein said display device is selected from the group consisting of video displays and printers.

19. A method of acquiring, storing, and playing back imaging information acquired from within a body lumen, comprising the steps of :

acquiring imaging information from within a body lumen in discrete samples detected sequentially in time at an imaging acquisition rate with an elongate intracorporeal instrument positioned at least in part within said body lumen;

storing said imaging information in an addressable memory device in an electronically-readable form; and

playing back stored imaging information in discrete units sequentially in time at a playback rate.

20. The method of Claim 19, wherein said playback rate comprises a rate less than said acquisition rate.

21. The method of Claim 19, wherein said playback step begins at a memory address selected from the group of memory addresses consisting of all possible memory locations.

22. The method of Claim 19, further comprising a step of displaying a video representation in accordance with said stored imaging information.

23. The method of Claim 19, wherein said stored information further comprises location information related to corresponding image detection samples, wherein said location information relates to the position within said body lumen at which said image information was detected.

24. The method of Claim 22, wherein said step of displaying a video representation comprises displaying a sequence of video images, wherein said sequence is selected from the group of sequences consisting of the acquisition sequence, the reverse acquisition sequence, the acquisition sequence with an omitted image, the reverse acquisition sequence with an omitted image, a sequence comprising an image comprising a sum of at least two images, a sequence comprising a difference between at least two images, a sequence comprising a filtered image, a sequence comprising an enhanced image, and combinations thereof.

25. The method of Claim 24, wherein said images have been modified by methods selected from the group consisting of analog methods, digital methods, and combinations thereof.

26. The method of Claim 19, wherein said acquiring step is performed in a period of time of less than one minute and a half.

27. The method of Claim 19, wherein said acquiring step is effective to acquire images from a length of body lumen about 10 cm in length.

28. The method of Claim 19, wherein said acquiring step is effective to acquire images from a length of body lumen about 7 cm in length.

29. A device for acquiring, storing, and playing back imaging information acquired from within a body lumen, comprising an acquisition component, an addressable memory component, a playback component, and image information transmission elements operably connecting said components, said acquisition component being configured to record image information in said addressable memory component in an electronically-readable form at an acquisition rate, and said playback component being configured to play back stored imaging information at a playback rate.

30. The device of Claim 29, wherein said playback rate is variable.

31. The device of Claim 29, wherein said playback rate may differ from said acquisition rate.

32. The device of Claim 29, wherein said addressable memory component comprises RAM.

33. The device of Claim 29, wherein said addressable memory component comprises a hard drive.

34. The device of Claim 29, wherein said addressable memory component comprises a compact disk.

35. The device of Claim 29, further comprising image enhancement and combination means.